

What is claimed is:

1. A method of detecting decryption of encrypted viral code in a subject file, comprising:

emulating computer executable code in a subject file;

5 flagging a memory area that is read during emulation of a first instruction in the computer executable code; and

detecting a modification to the flagged memory area during emulation of a second instruction in the computer executable code.

10 2. A method of detecting encrypted viral code in a subject file, comprising:

emulating computer executable code in a subject file;

15 maintaining a list of memory regions that have been read and then modified during the emulation;

determining whether a memory area is read during emulation of a first instruction in the computer executable code and whether the memory area is modified during emulation of a second instruction in the computer executable code;

18 updating the list of memory regions to include the modified memory area; and

triggering a viral detection alarm, if one of the listed memory regions is larger than a predetermined size.

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3. The method of claim 2, wherein the emulation is performed on an instruction-by-instruction basis.

25 4. The method of claim 2, further comprising:

determining whether a selected one of the listed memory regions overlaps the modified memory area; and

updating the selected memory region to encompass the modified memory area.

30 5. The method of claim 2, further comprising:

determining whether a selected one of the listed memory regions is contiguous

with the modified memory area; and

5 updating the selected memory region to encompass the modified memory area.

6. The method of claim 2, further comprising:

5 determining whether the modified memory area overlaps the listed memory regions; and

10 adding the modified memory area as a new memory region to the list of memory regions, if the modified memory area does not overlap any of the listed memory regions.

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15 7. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for detecting decryption of encrypted viral code in a subject file, the method steps comprising:

emulating computer executable code in a subject file;

20 15 flagging a memory area that is read during emulation of a first instruction in the computer executable code; and

detecting a modification to the flagged memory area during emulation of a second instruction in the computer executable code.

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8. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for detecting encrypted viral code in a subject file, the method steps comprising:

emulating computer executable code in a subject file;

25 maintaining a list of memory regions that have been read and then modified during the emulation;

determining whether a memory area is read during emulation of a first instruction in the computer executable code and whether the memory area is modified during emulation of a second instruction in the computer executable code;

30 updating the list of memory regions to include the modified memory area; and

triggering a viral detection alarm, if one of the listed memory regions is larger

than a predetermined size.

9. A computer system, comprising:

a processor; and

5 a program storage device readable by the computer system, tangibly embodying a program of instructions executable by the processor to perform method steps for detecting decryption of encrypted viral code in a subject file, the method steps including
emulating computer executable code in a subject file;

10 flagging a memory area that is read during emulation of a first instruction in the computer executable code; and

detecting a modification to the flagged memory area during emulation of a second instruction in the computer executable code.

15 10. A computer system, comprising:

a processor; and

a program storage device readable by the computer system, tangibly embodying a program of instructions executable by the computer system to perform method steps for detecting encrypted viral code, the method steps including

emulating computer executable code in a subject file;

20 maintaining a list of memory regions that have been read and then modified during the emulation;

determining whether a memory area is read during emulation of a first instruction in the computer executable code and whether the memory area is modified during emulation of a second instruction in the computer executable code;

25 updating the list of memory regions to include the modified memory area; and

triggering a viral detection alarm, if one of the listed memory regions is larger than a predetermined size.

30 11. An apparatus for detecting decryption of encrypted viral code in a subject file,

comprising:

a code emulator, wherein the code emulator emulates computer executable code in a subject file, and outputs memory access information corresponding to the emulated computer executable code; and

5 a memory monitor, wherein the memory monitor monitors the memory access information output by the code emulator, flags a memory area that is read during the emulation of a first instruction in the computer executable code, and detects a modification to the flagged memory area during emulation of a second instruction in the computer executable code.

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12. An apparatus for detecting encrypted viral code in a subject file, comprising:
a code emulator, wherein the code emulator emulates computer executable code in a subject file, and outputs memory access information corresponding to the emulated computer executable code; and

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a memory monitor, wherein the memory monitor monitors the memory access information output by the code emulator, maintains a list of memory regions that have been read and modified during emulation, determines whether a memory area is read during emulation of a first instruction in the computer executable code and whether the memory area is modified during emulation of a second instruction in the computer executable code, updates the list of memory regions to include the modified memory area, and triggers a viral detection alarm, if one of the listed memory regions is larger than a predetermined size.

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25 13. The apparatus of claim 12, wherein the code emulator performs the emulation on an instruction-by-instruction basis.

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14. The apparatus of claim 12, wherein the memory monitor determines whether a selected one of the listed memory regions overlaps the modified memory area, and updates the selected memory region to encompass the modified memory area.

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15. The apparatus of claim 12, wherein the memory monitor determines whether a selected one of the listed memory regions is contiguous with the modified memory area, and updates the selected memory region to encompass the modified memory area.

5 16. The apparatus of claim 12, wherein the memory monitor determines whether the modified memory area does not overlap the listed memory regions, and adds the modified memory area as a new memory region to the list of memory regions.

10 17. A computer data signal embodied in a transmission medium which embodies instructions executable by a computer for detecting decryption of encrypted viral code in a subject file, comprising:

15 a first segment including emulator code, wherein the emulator code emulates computer executable code in a subject file, and outputs memory access information corresponding to the emulated computer executable code; and

15 a second segment including memory monitor code, wherein the memory monitor code monitors the memory access information output by the code emulator, flags a memory area that is read during the emulation of a first instruction in the computer executable code, and detects a modification to the flagged memory area during emulation of a second instruction in the computer executable code.

20 18. A computer data signal embodied in a transmission medium which embodies instructions executable by a computer for detecting encrypted viral code in a subject file, comprising:

25 a first segment including emulator code, wherein the emulator code emulates computer executable code in a subject file, and outputs memory access information corresponding to the emulated computer executable code; and

30 a second segment including memory monitor code, wherein the memory monitor code monitors the memory access information output by the code emulator, maintains a list of memory regions that have been read and modified during emulation, determines whether a memory area is read during emulation of a first instruction in the computer

executable code and whether the memory area is modified during emulation of a second instruction in the computer executable code, updates the list of memory regions to include the modified memory area, and triggers a viral detection alarm, if one of the listed memory regions is larger than a predetermined size.